V. RECHARGE DEMAND: POTENTIAL PROJECT PARTICIPANTS

A. Municipal Providers

Recharge will be an important tool for municipal water providers in the Tucson AMA. One of the primary motivating factors for municipal providers to recharge water is Arizona's AWS program. The AWS program requires that any new subdivision plats within AMAs can only be approved when there is a demonstrated supply of water to meet the needs of the development for 100 years. Part of this water may be groundwater, but the bulk of the supply must be renewable water. Municipal providers located far from the CAP canal, who are without a CAP allocation, or who are unable for other reasons to deliver CAP water directly to customers, can use recharge through various mechanisms to meet AWS requirements. A provider that recharges renewable water in an ADWR-permitted facility may earn credits that count as renewable water for AWS purposes. According to AWS rules, providers that join the CAGRD can rely on the District to recharge for them (see Chapter IV, Section C.2), but some will choose to recharge for themselves in order to control their costs. Table 4 lists water providers in the Tucson AMA and their AWS status. All of the designated providers listed in Table 4 are, or will be, members of the CAGRD.

Table 4. Assured Water Supply Status of Tucson Active Management Area Water Providers

Provider	1996 Population	Assured Water Supply Status
Community Water Company of Green Valley	12,819	Expired, unlikely to reapply
Farmers Water Company	686	Expired, unlikely to reapply
Forty-Niner Water Company	872	Expired, unlikely to reapply
Green Valley Water Company	4,203	Expired, unlikely to reapply
Marana Municipal Water System	533	Designation granted
Metropolitan Domestic Water Improvement District	42,861	Designation granted
New Pueblo Water Company (Purchased by Community W.C. of Green Valley)	841	Expired, unlikely to reapply
Ray Water Company	4,617	Expired, unlikely to reapply
Spanish Trail Water Company	551	Designation granted
Town of Oro Valley (Formerly Cañada Hills and Rancho Vistoso Water Companies)	23,229	Designation granted
Tucson Water	559,602	Designation granted
Vail Water Company (formerly Del Lago Water Company)	921	Designation granted

Recharge serves as a storage mechanism for municipal providers that need to firm up water supplies for future droughts on the Colorado River system. After the year 2025, it is anticipated that the probability of shortages on the Colorado River which affect CAP water users will reach approximately 30%. The probability that municipal and industrial uses will be affected is approximately 5% (AWBA Study Commission 1997). Therefore, municipal providers are interested in accruing long term storage credits that may be recovered for delivery during drought years.

Another motivation for municipal providers to recharge is provided by A.R.S. § 45-853.01(B), which allows providers who store water to use long term storage credits to offset gallons per capita per day (GPCD) violations occurring before the year 2000. Municipal providers are required to meet conservation targets based on the average water use in their service areas. If more water is used than allowed by a provider's GPCD target, the provider can be fined. A municipal provider that holds a storage permit in a permitted recharge facility can use credits to offset the groundwater pumping in excess of its GPCD target.

Some municipal providers hold contracts for CAP water but are unable to use their allocation directly. They must continue to pay the capital charges associated with their contracts as long as they hold them, whether or not they take CAP water. This motivates these municipal providers to find some use for their CAP allocation. Recharge credits are valuable to such a provider for its own AWS and/or GPCD needs, but also have a value as a commodity to be sold to other entities with similar needs. The Groundwater Code allows the assignment of long term storage credits to another entity, subject to certain limitations.

AWS rules and GPCD targets are designed to assist in reaching the policy goals of sustainable development, safe yield and water conservation. Many municipal providers are motivated by a sense of public responsibility that prompts them to go beyond the minimum required by state law. They will use recharge to bank renewable water now, when it is abundant, in order to have an ample supply in the future and to ensure a reliable supply of water for their customers in times of shortage.

B. Irrigated Agriculture

Irrigated agriculture in the Tucson AMA used about 97,000 AF of water in 1995, approximately 30 percent of the total water use in the AMA during that year. Although there has been a recent increase in water use, agricultural water use has declined fairly steadily since 1984. Agricultural water use is expected to continue shrinking to around 69,000 AF in 2025. Irrigated agriculture is playing an important role in recharge through GSFs. Farms and irrigation districts that would otherwise pump groundwater but instead agree to use a renewable source can be permitted as GSFs. Typically, a municipal provider buys CAP water from CAWCD, either through a subcontract or as excess incentive-priced water, and resells it at a lower price to a farm or district for irrigation. In exchange, the provider earns storage credits for the amount of groundwater

"saved" when the farmers turn off their pumps and use CAP water instead. The cost of conveyance systems needed to carry water from the CAP canal is borne singly or shared by participants. The increased use of water for agriculture in recent years has prompted an evaluation of the use of in-lieu water at GSFs. These facilities are required to use renewable supplies strictly in place of groundwater that would have otherwise been pumped.

C. Mines

In the Tucson AMA, metal mines are major industrial water users that operate exclusively on groundwater. They declined their CAP subcontracts primarily because of economic considerations. Sentiment in the Tucson area, however, favors CAP water use by the mines as a preferred alternative to their continued groundwater pumping. A study of potential CAP water use in mining suggests that the relative price of CAP water being supplied to GSFs would not preclude its use at the mines if costs were highly subsidized by municipal users through GSF arrangements (Southwest Groundwater Consultants 1997). The mines are concerned about the difference between CAP water and groundwater chemistry, effects on metal production, the reliability of their water supply, and costs. They will look closely at any GSF proposals with these concerns in mind.

D. Other Potential Participants

Please refer to Chapter IV for discussion of possible impacts on recharge demand for several agencies and governments, including the AWBA, CAWCD, CAGRD, USBR, and Indian nations.

1. Upper Santa Cruz Water Users Group

The Upper Santa Cruz Water Users Group (USCWUG) consists of Green Valley/Sahuarita area water users and regional governments and institutions (Pima County, USBR, CAWCD and the City of Tucson), and was formed to evaluate options for CAP water use in the area. ADWR contracted Malcolm Pirnie to perform a feasibility and optimization study for the conveyance of CAP water to water providers and users in the Green Valley/Sahuarita area. This feasibility study was funded by groundwater pumping fees through ADWR's Augmentation Program. The Augmentation Program encourages development of alternative water supplies to supplement dwindling groundwater resources. USCWUG was instrumental in helping to develop the scope of work for the study, and has acted as a technical advisory group to the consultant.

The objective of the study was to find a route for a pipeline from the CAP terminus area near Pima Mine Road to area water users that maximizes CAP water use, minimizes unit cost over time, and allows delivery flexibility. The study was authorized in August 1997. The consultant assessed demand projections, environmental issues and other factors affecting the potential construction and operation, analyzed alignment options and has recommended an optimal route. The consultant provided a preliminary design and cost estimate data, and performed a financial feasibility analysis for the recommended route. The project completion date is August 1998.

2. Northwest Replenishment Program

The Northwest Replenishment Program is a cooperative effort which has involved ADWR, USBR, the Town of Oro Valley, the Town of Marana, Pima County Wastewater Management Department, Pima County Flood Control District, Metropolitan Domestic Water Improvement District (MDWID), CAWCD, Cortaro-Marana Irrigation District (CMID), BKW Farms, and Tucson Water. The Northwest Replenishment Program was formed to address local supply issues by using artificial recharge of CAP water and effluent for supply augmentation, wildlife and vegetation enhancement, recreation, and flood control. The members have joined in the feasibility assessment and development of water storage projects which offer regional benefits, including the Avra Valley Recharge Project, Lower Santa Cruz Recharge Project and the Cañada del Oro Recharge and Recovery Project. Replenishment district members in the rapidly growing Northwest portion of the Tucson Metropolitan Area hope to benefit from the water supply assurance and drought protection offered by these projects.

3. Pima County

Pima County is interested in working with others in the region to develop multi-purpose projects to use CAP water. Pima County uses groundwater to irrigate county parks and is interested in utilizing renewable supplies. The County, therefore, has an interest in storage credits that allow it to recover water for irrigation purposes. In addition, Pima County Wastewater operates the regional wastewater treatment facilities and the County is interested in certain projects that would recharge effluent.

Pima County Flood Control District owns significant floodway and floodplain property which may be suitable for groundwater recharge, and is interested in participating in multi-purpose recharge projects. County flood control districts are allowed to construct, operate and maintain underground storage facilities and cooperate with other governmental entities in developing such facilities if they have flood control benefits (A.R.S. §48-3603).

4. Arizona State Land Department

The Arizona State Land Department (ASLD) holds in trust large amounts of land, some of which may be useful for USF or GSF recharge. ASLD is required by the Arizona constitution to manage these lands in order to maximize benefits to state land trust beneficiaries. This has been interpreted to mean maximizing the value of, and income from, the land. ASLD develops land use plans for the land it controls and evaluates proposals for the use of the land on the basis of these plans. It works with local entities when developing the plans and depends on such entities to implement them.

ASLD has a CAP allocation for the Tucson AMA of 14,000 AF annually. Its allocation is assigned to state trust lands and can be transferred to the lessee or purchaser of that land. A recent statutory change allows ASLD to store a portion of its allocation when it contracts with an entity willing to pay all CAWCD "operation, maintenance and replacement charges" (A.R.S. §37-106.01(F)). ASLD and its partner may share the storage credits based on the proportion of the total costs each pays, and ASLD may sell its credits at their appraised market value. Metro Water

District was the first entity to partner with ASLD and in 1998 will store a portion of ASLD's allocation in the Tucson AMA.

5. Arizona Water Protection Fund

Monies from the Arizona Water Protection Fund can be used for planning, design or construction of recharge projects that use reclaimed water or CAP water to create or benefit riparian areas. The Arizona Water Protection Fund was established by the Arizona Legislature in 1994 to provide an annual source of funds to maintain, enhance and restore rivers and streams and associated riparian habitats. The Water Protection Fund Commission was created to administer the fund through a grants program. The Commission may also "provide funding to develop and protect riparian habitats in conjunction with a man-made water resource project, if the man-made water resource...project directly or indirectly benefits a river or stream and includes or creates a riparian habitat" (A.R.S. §45-2101(B)). Approximately $5 million will be available to fund projects for fiscal year 1998.

6. Others

Individual entrepreneurs, interested water resources professionals and community activists have participated in recharge projects by finding, studying and bringing recharge sites to the attention of decision-makers. Because recharge is perceived as a tool with many uses, many people are interested in putting the tool to use for the benefit of the community. Multipurpose projects which include recreational activities are gaining substantial public support.